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CEOS/IDN
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Bem-vindo ao Brasil!

Welcome to Brazil!

By: Lubia Vinhas, INPE

INPE (Brazil's National Institute for Space Research) will be hosting the WGISS-35 meeting in São José dos Campos, São Paulo state, Brazil, May 6-10, 2013. São José dos Campos, (Saint Joseph of the Fields) is a municipality and a major city in the state of São Paulo, Brazil and one of the most important industrial and research centers in Latin America. It is located in the Paraíba Valley between the two most active production and consumption regions in the country; São Paulo and Rio de Janeiro. According to a 1999 UN study, São José dos Campos was rated one of the top 25 Brazilian cities for quality of life. With its high per capita income,



long life expectancy and high level of infrastructure, São José dos Campos is a safe and secure city that offers a wide variety of stores and services. A native of São José dos Campos is called a *joseense*. The National Institute for Space Research (INPE) is a unique and plural institution in Brazil, which has been active for 51 years. INPE developed a Space Weather program that aims to provide information about conditions in near-Earth space within the magnetosphere and the ionosphere. INPE is also the main center for numerical weather forecasting using a CRAY and supercomputer (currently ranked 29th in the world's top supercomputers). The Earth System Science center

focuses on forecasts on the impact of Climate Change in Brazil. In Earth Observation, INPE focused on land use monitoring, especially deforestation in Amazonia and sugarcane expansion in the central part of Brazil. As for Space Engineering, the CBERS Program was born from a partnership between Brazil and China in the space technical scientific segment. Consequently, Brazil joined a select group of countries with remote sensing technology. INPE has also established a free and open access policy for satellite imagery that permitted for the free distribution of more than 2 million images between 2005 and 2012.



The GCMD staff is pleased to announce the release of version 7.0 and version 8.0 of the GCMD/IDN keywords. These releases represent a major revision and expansion of the Human Dimensions, Climate Indicators, Solid Earth and Atmosphere > Clouds keywords. Additions and changes to the keywords were the result of many years of collaboration with the Earth Science community.

GCMD/IDN Science Keyword Release Announcement

By Tyler Stevens, GCMD/IDN Data Services
Coordinator

If you are a user of the Keyword Management System (KMS) for access to the keywords, please refresh the service to ingest the latest keywords. To access the KMS, please use your EOSDIS User Registration System (URS) username and password.

If you do not have a URS account, you may create one at the following link: <https://urs.eosdis.nasa.gov/>. Documentation on the KMS is available at <http://gcmd.gsfc.nasa.gov/Connect/>. If you have any questions, please contact our user support office at gsfc-gcmduso@mail.nasa.gov.

Please use the following citation when using the GCMD keywords:

Olsen, L. M., G. Major, K. Shein, J. Scialdone, S. Ritz, T. Stevens, M. Morahan, A. Aleman, R. Vogel, S. Leicester, H. Weir, M. Meaux, S. Grebas, C. Solomon, M. Holland, T. Northcutt, & R. Bilodeau, 2012. NASA/Global Change Master Directory (GCMD) Earth Science Keywords. Version 7.0.0.0

New Global Change Master Directory

By Shez Areu, System Developer

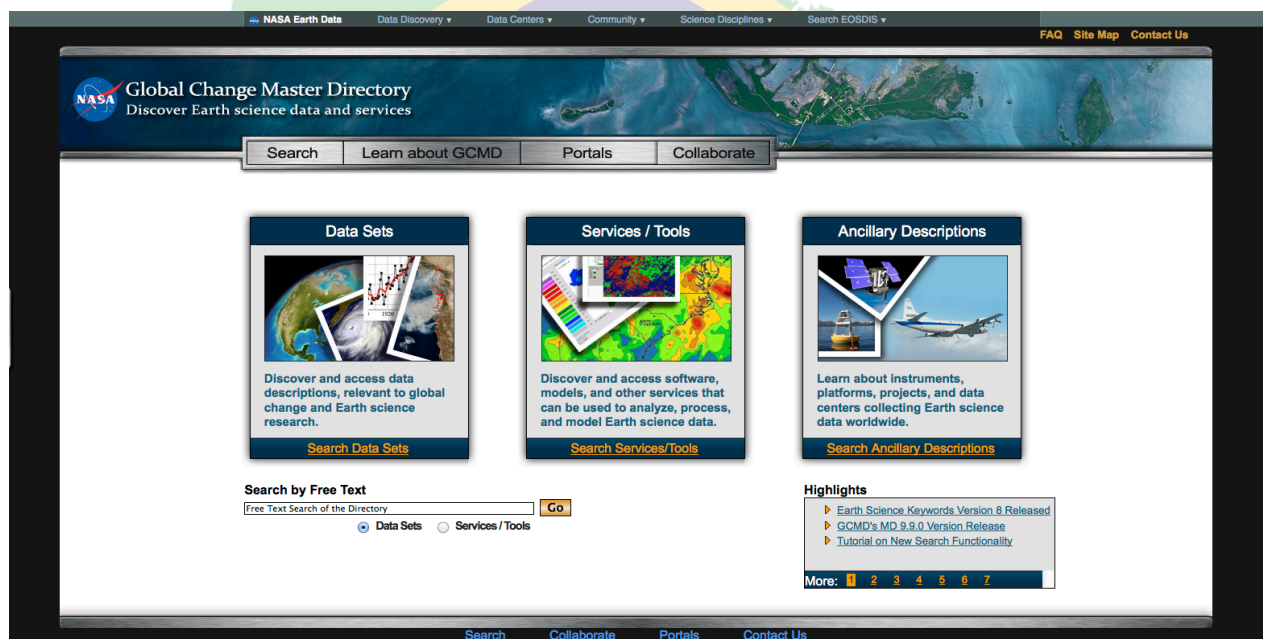
The primary objective for the GCMD team when designing its new website was to continue to provide an intuitive and helpful user experience to the existing user base, while being able to reach out to new users and offer new and innovative ways of searching for Earth Science data and services.

Producing the final version of the website was a multi-step process. As the first step, an Information Architecture Committee was formed with the objective of designing a new structure or 'Information architecture' for the site. This organizational plan would later emerge as the backbone of the new website. In the initial stage, all members of the team were asked to participate in an individual online card-sorting exercise to re-organize different pages and components from the existing site. The Architectural Committee then accumulated the individual feedback and used it to plan and execute a hands-on card-sorting exercise with most members of the team. After much thought and "house cleaning" the end result was what the team believes is a simpler, less redundant, intuitive and easier-to-navigate architectural plan for the site. This new architecture was then presented to the GCMD web designer to create a new look-and-feel for the site. The visual designs produced at this stage went through many iterations before a final web design was accepted. The final step of the process was converting the visual designs of the web pages into an interactive and fully functional website by the GCMD team of software developers. The site was built primarily using Google Web Toolkit and Ext-JS (GXT) technology. The new GCMD website offers exciting changes on the surface, as well as improvements within the deeper workings of the system.

(continued...)

The new home page features a refreshing color scheme and updated design, which is easy to navigate for experienced and new users alike. The first two (of three) “entryways” into the site lead the user into the GCMD hierarchy of keywords to allow them to search for Earth Science data and services respectively. A third doorway titled ‘Ancillary Descriptions’ now gives users the option to search for descriptions of platforms, instruments and more. Within the Earth Science data section of the site, the user may search using multiple options including GCMD’s set of controlled keyword hierarchies such as Science Keywords, Platforms, Instruments, Data Providers, etc. Alternatively, the user can first perform a free-text search and then narrow the results further by using relevant controlled keywords.

The new GCMD website also features a new and improved spatial and temporal search. Users may now identify any region of the world on a Google map and find relevant data. A range of dates can also be specified as an added search parameter with easy-to-use calendar widgets. This feature was custom-built by GCMD for its new website using Google Maps API and JavaScript. After the spatial and temporal search parameters have been specified, this interface connects users to the ‘Refinement View’ of the site, where the list of results can be viewed and narrowed down.



The ‘Refinement View’ is where the users really close in on their sought-after data. The user is presented with a list of titles, based on the initial search, in the right panel along with a variety of criteria to further narrow or ‘refine’ the set of results. The GCMD keyword hierarchies are one such criteria and are presented in a visually appealing and intuitive tree-like structure in the left panel, along with other refinement options such as spatial and temporal parameters. Selecting and unselecting any of the various search criteria (or any combination thereof) expands or shrinks the list of results nearly-instantaneously without reloading the entire page. This responsiveness is achieved through asynchronous calls to the GCMD server and provides the user with a seamless search experience.

The new GCMD website offers a plethora of new features and an updated, stream-lined visual design. The GCMD team is hopeful that this new website will offer an increasingly richer and fulfilling online experience for new and existing users alike.

KMS and MWS Release

By: Shez Areu, Hoan-Vu Tran-Ho, Thomas Cherry, Monica Holland, Chris Gokey

This GCMD/IDN Metadata Web Service is a RESTful service for retrieving and publishing Earth science resources (data set descriptions, service descriptions, ancillary descriptions, keywords, etc.). It provides a machine-to-machine interface exposing the following capabilities:

- Retrieval of a list of all metadata documents and filtered by a query expression (e.g., by instrument)
- Retrieval of a specific metadata document, using its unique identifier.
- Retrieval of a list of unique identifiers for metadata documents with filtering via query expression.
- Retrieval of a list of keywords for a specific metadata field.
- Retrieval of a list of all personnel (e.g., principal investigators) and their contact information from the personnel database with the ability to filter results by last name.
- Retrieval of specific “personnel” contact information from the personnel database given: first, middle, and/or last name.
- Validation of a metadata document before publishing the document to the directory.
- Publication of a metadata document for review and submission into the directory.

Detailed Documentation: <http://gcmd.gsfc.nasa.gov/Connect/docs/mws/MetadataWebServiceAPI.pdf>

The Keyword Management Service (KMS) operates a RESTful web service offers maintaining keywords (science keywords, platforms, instruments, data centers, locations, projects, services, resolution, etc.) in the GCMD/IDN system. The KMS allows access to the keywords maintained in the Keyword Management System as SKOS Concepts (RDF) or as XML <Concept /> objects. The Simple Knowledge Organization System (SKOS) is a standard - defined for representation of thesauri, classification schemes, taxonomies, subject-heading systems, or any other type of controlled vocabulary. SKOS is built upon RDF and RDFS. Its main objective is to enable easy publication of controlled structured vocabularies for the Semantic Web. SKOS is currently developed within the W3C framework. The list of attributes associated with a SKOS Concept include:

SKOS concept

- concept scheme (e.g., science keywords, platforms, instruments, etc.)
- concept ID (globally unique, read only)
- broader - list of broader concepts
- narrower - list of narrower concepts
- related - list of related concepts
- definition- one per language
- pref label - preferred, one per language
- pref symbols - image of the concept, second phase but interface should support its addition
- alt labels - list, multiple per language
- alt symbol - image, second phase but interface should support its additional hidden labels - list (common misspellings), second phase change note - list of changes, human and computer inserted sorted by time
 - o date - computer managed
 - o note

Detailed Documentation: <http://gcmd.gsfc.nasa.gov/Connect/docs/kms/KeywordManagementServiceAPI.pdf>

The CEOS International Directory Network (IDN) staff is pleased to announce a new field for encoding user-defined values within the Directory Interchange Format (DIF) and the Service Entry Resource Format (SERF). This new field is called "Extended_Metadata" and contains "name-value" pair elements. A "namevalue" pair (also known as "key-value" pair) permits user-defined field names and assigns them with specific values. The field will be available November 2012.

http://gcmd.nasa.gov/add/difguide/extended_metadata.html

Purpose

To accommodate the inclusion of data not specifically supported by other fields, additional XML structures will be added to the end of the DIF/SERF.

Syntax

New XML structure:

```
<Extended_Metadata>
<Metadata>
<Group> </Group>
<Name> </Name>
<Value> </Value>
</Metadata>
</Extended_Metadata>
```

"Extended_Metadata" properties are presented to the user as an optional structure and are not required for the completion of a DIF or SERF. This field makes it possible to remove the "Extended_Metadata" field from the metadata and still maintain the same functionality as that of an existing DIF/SERF. Metadata authors should not use the "Extended_Metadata" field as a replacement for any field that may have existing requirements in favor of the more relaxed requirements of this new field.

Background

Metadata providers have frequently expressed the need for encoding highly specific information in uniquely named fields. However, those fields are currently not offered in the DIF/SERF standard. During the process of metadata format translation, a direct "field-to-field" mapping does not always exist. As a result, the source metadata is either lost or inserted as text blocks. Metadata providers requested the ability to specify metadata attributes that are critical for their specific discipline. However, a direct way to encode this metadata in a parsable and searchable format previously did not exist. Therefore, a mechanism for encoding name-value pairs in the DIF/SERF has been implemented. The availability of the "Extended_Metadata" field addresses the need to extend metadata to support data center custom fields, which are important to individual data centers. However, they but do not rise to the level of modifying the DIF/SERF standard. The structure allows metadata authors and translators to create name-value elements, as needed. The GCMD will maintain a list of name-value pairs that may be shared and made public with other organizations.

IDN Introduces a New Metadata Field: "Extended Metadata"

By GCMD Science Coordinators

Collaborations with the Federation of Earth Science Information Partners (ESIP)



By Tyler Stevens, GCMD/IDN Data Services Coordinator

The Federation of Earth Science Information Partners (ESIP) is a consortium of more than 120 organizations that collect, interpret, and develop applications for Earth science information. Organizations included in the ESIP network are NASA, NOAA, USGS, research universities, government research laboratories, nonprofit organizations, and commercial enterprises. The GCMD/IDN staff has been actively involved with ESIP for over seven years and participates in many working groups, including the **(1)** Documentation Cluster, **(2)** Products and Services Committee, and **(3)** Preservation/Stewardship Committee. GCMD/IDN staff members also attend their biannual meetings. The GCMD also maintains portals for ESIP partner metadata collection (data and services). <http://gcmd.nasa.gov/KeywordSearch/Home.do?Portal=esip>
http://gcmd.nasa.gov/KeywordSearch/Home.do?Portal=esip_svcs&MetadataType=1.

Recent Collaborations with ESIP:

(1) Co-led a Workshop on “Advancing Access to Earth Science and Climate Data and Services Using RESTful Web Services from NASA’s Global Change Master Directory (GCMD)”. <http://commons.esipfed.org/node/711>. The workshop introduced the new GCMD keywords and the Keyword Management Service (KMS) for the management of the keywords (science keywords, service keywords, platforms, instruments, data centers, locations, projects, etc.). The KMS allows access to the keywords in SKOS/RDF, OWL, XML, and CSV formats.

(2) Gave demonstrations of the Next-Generation website and solicited feedback from the scientific community. Changes were made to the website, based on feedback received from the community. <http://gcmd.nasa.gov/nextgen/>.

(3) Created a training module on “Metadata for Discovery” and “Submitting Metadata to GCMD” for the ESIP Data Management Short Course. These modules have been used at scientific meetings, including the American Meteorological Society (AMS), the American Geophysical Union (AGU), and the Association of Polar Early Career Scientists Webinar on Data Management. <http://commons.esipfed.org/datamanagementshortcourse>.

(4) Elected to the ESIP Partnership Committee. The Partnership Committee reviews all applications for membership in the ESIP Federation. In addition, the committee has served as the ESIP Federation's liaison to new members as each seeks to get involved. <http://wiki.esipfed.org/index.php/Partnership>.

Update on CEOS WGISS Integrated Catalog (CWIC) and NASA's contributions to the CWIC Project

By Michael Morahan IDN CEOS Coordinator

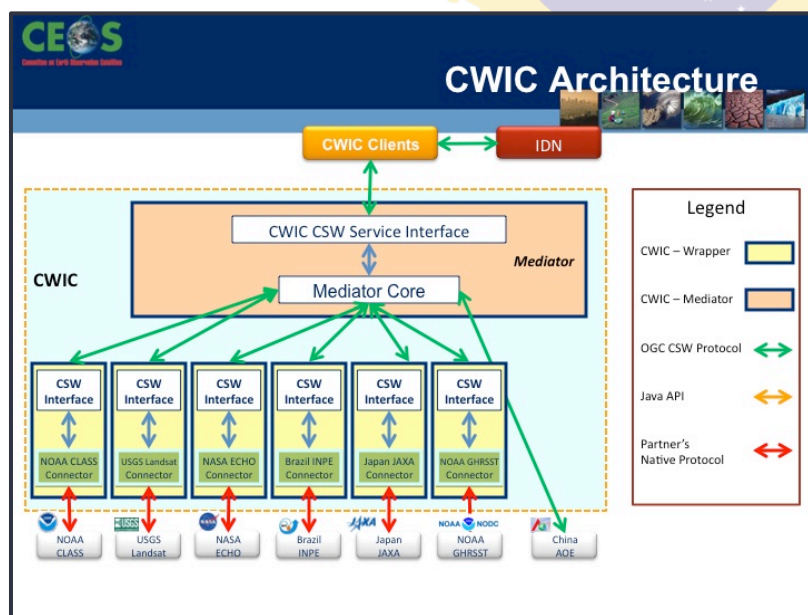
In the September 2010 issue of the IDN Newsletter, Martin Yapur (NOAA), offered his thoughts on CWIC :

“CWIC is rapidly gaining the attention among client and data partners in the US and is being seriously considered by representatives from China, INPE, and Europe who have expressed their interest in participating.”

“In essence, CWIC will act as middleware between the WGISS agency data partners and user interface client partners by translating between the GEO-supported OGC CSW protocol to the catalog standards used by the partner data systems. Societal Benefit Area (SBA) portals and virtual constellation portals will send search requests for satellite data to CWIC, which will send the directory/collection searches to the CEOS IDN and distribute the inventory searches using the WGISS common search criteria to partner data systems.”

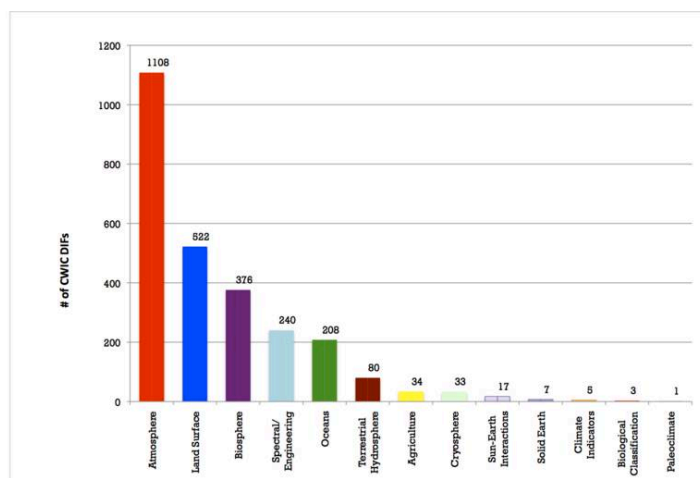
Since Martin's article, CWIC has transitioned from concept to functional software. CWIC is now connecting users to hundreds of Earth Science data sets from multiple US and international agencies. The number of international contributors has grown with (1) Brazil's National Institute for Space Research (Instituto Nacional de Pesquisas Espaciais)(INPE), (2) the Chinese Meteorological Administration (CMA) (see Figure 1) and (3) the Japan Aerospace Exploration Agency (JAXA) joining US agencies NOAA, NASA, and USGS.

The CWIC data providers are supporting CWIC with millions of data files (data granules) from a wide range of CEOS member Earth Science missions such as: **Beijing-1, CBERS 2B, CBERS 2, LandSat, AIRS, and MODIS.** More than 1760 GCMD/IDN data collection metadata entries are available to the CWIC system.



(Figure 1: CWIC Architecture flow)

(continued...)



(Figure 2: Number of available data sets by science keyword discoverable through the IDN for CWIC.)

After discussions at the CWIC 2012 workshop, the IDN initiated the development of a CWIC DIF metadata entry tool (IDN's CWIC docBuilder (see Figure 3). The metadata entry tool will help CWIC data providers easily enter data collection descriptions into the IDN that will be available to the CWIC clients. The metadata tool display was customized to accommodate all CWIC required metadata fields. The IDN member strongly suggests completing as many of the other recommend fields as possible. Documentation for contributing IDN DIFs for CWIC can be found on the CEOS/WGISS CWIC homepage.

(<http://tinyurl.com/48943am>).

NASA Support for CWIC:

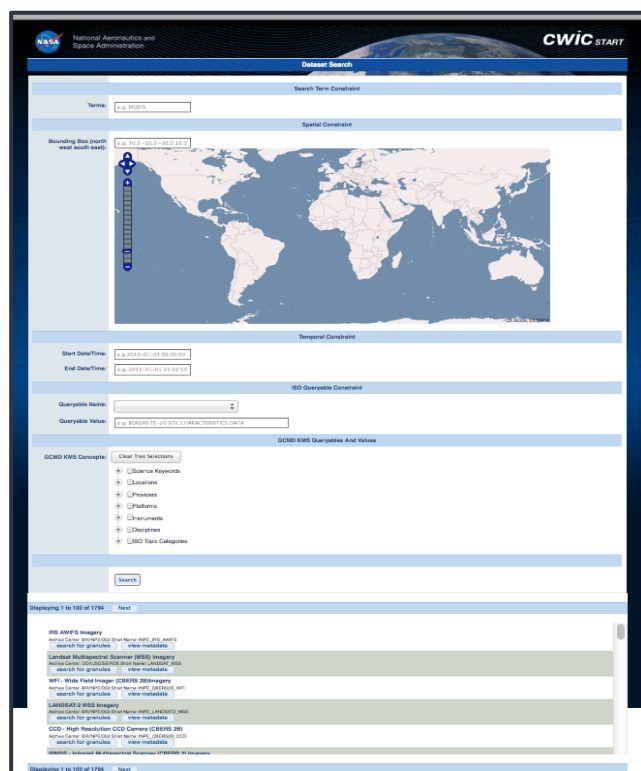
(1) International Directory Network Support:

The IDN is supporting the CWIC project with data set discovery services for the CWIC Client providers. The Client providers can connect to the IDN's Catalog Service for the Web (CSW) or Metadata Web Service (MWS) to discover hundreds of recorded Earth Science data set entries (see Figure 2) with detailed descriptions of the data sets. The clients can use these new GCMD/IDN tools with the users' inputs to filter and refine and subsequently to locate the desired data collections for their project. Afterwards, the clients send the GCMD/IDN Entry IDs to the CWIC middleware to identify the data files needed by the project. (Additional information on IDN services:

(<http://tinyurl.com/bplejra>)

(Figure 3: IDN's CWIC docBuilder contribution.)

(continued...)



(Figure 4: NASA's CWIC-START)

<https://api.echo.nasa.gov/cwic-start/>

(2) REVERB Support:

For data discovery, NASA has developed the “CWIC-START” Client. Earth science data users are able to discover data files (from the IDN identified data sets) through this new search client. The client is based on NASA’s “Reverb” tool for discovering NASA’s Earth Science data. Prior to the release of REVERB, It has been an ongoing challenge for users to query by keywords and by spatial and temporal information from the data collections available to CWIC, to identify desired data files (see Figure 4).

Reverb is the next generation metadata and service discovery tool for NASA's Earth science data including EOSDIS datasets and granules. Data orders submitted through Reverb will be transmitted to the corresponding data center for processing.

IDN/WGISS-35 Agenda

- **Introductions**
- **New Development**
- **GCMD/IDN: 9.9.0 Release**
- **Link-Checker: First step in correcting outdated links.**
- **New “STATIC” CSW Server**
- **Future 9.9.1 Release**
- **Bulk-Uploader**
- **ISO to DIF Converter**
- **Keyword Release**
- **New IDN Design**
- **IDN Metrics**
- **DIF and SERF Population**
- **IDN Web Site**
- **GEOSS Metrics**
- **Questions**



An Experience of A Life Time

By: Bryante Hayman GCMD
Intern

My name is Bryante' L. Hayman: I'm currently a freshman at Bowie State University in Bowie, MD. Some would describe my personality as borderline angelic and minimally energetic, while others would describe me as eccentric, "hyper", and stubborn. My hobby is to accumulate hobbies. I collect mugs, design nails, bake pastries, design personalized phone covers, cheerlead, dance, and participate in all activities that interest me. I also gain a sense of eagerness for overcoming challenges, such as participation in the work-study program at Eleanor Roosevelt High School. The College Career Research Program is a work-study program to introduce and prepare participating senior students for the business world. Thanks to this program, I am now an intern at NASA working with the Global Change Master Directory and the international Committee on Earth Observation Satellites' (CEOS) International Directory Network.

During the interview stage before my employment, I was a bundle of nerves! Though I appeared to be calm and confident in my business suit and black conservative heels, on the inside I was "sweating bullets" constantly thinking,

"Do they like me? Have they already made their decision to send me straight out the front gate and tell me to never come back?" The feeling of self-

consciousness and worry soon faded as I met with other employees who were all (and still are!) very welcoming. I felt a confidence "boost" once I saw how impressed they were with my resume portfolio. (Thank you business class!) Almost immediately I began to feel part of a team: the feeling was complete during my interview with Lola Olsen, GCMD Project Manager. The discussion with Ms. Olsen was not as much an interview, as it was a conversation one might have with someone they had just met. She made me feel that I was already part of the team and that she genuinely had an interest in learning who I am and what I am about. After leaving the center, I constantly prayed to be welcomed back with open arms. Thankfully, my prayers were answered and I was offered a position. I am now an employee of the ADNET Contracting Company and am delighted to be learning and contributing to the GCMD at NASA'S Goddard Space Flight Center.

My first day was somewhat unsettling for the fear of being given an assignment I could not complete. Nevertheless, the day revealed to be overall very interesting to me. A meeting was called to introduce me to all of the employees. Everyone shared their typical workday scenario, along with their primary interests. At the end of the day, I felt as if everything had progressed rapidly. I was panicked by the thought of missing an important detail; however once again, an encouraging talk with Ms. Olsen had me "ready and set to go." She, along with others, made it very clear that the entire staff will always be there if I needed any questions answered or help with anything.

To this day, I am very thankful to be here learning and contributing. I am quite comfortable in my position and anticipate every day with enthusiasm. I found some of the work to be monotonous; however, I expect it to be a great experience in the long term. I love the approach I am able to take in the NASA environment. The diverse staff is completely open to a variety of opportunities. An example of what appeals to me most is the depth of critical understanding of "ground truth". NASA's scientists, along with other agency scientists, determine variables such as data captured from satellites. The data are captured, observed on the ground. Another plus of my new employment is the workplace environment. My co-workers are very supportive and friendly, and I am delighted to be here and hope to contribute more each day.